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**G06V 10/26; G06V 10/454; G06V 10/764;**  
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(Cont.)

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(54) **LONG-TERM AND CONTINUOUS ANIMAL BEHAVIORAL MONITORING**

(57) Systems and methods for continuous monitoring of the behavior of animals, such as small rodents, are provided. Monitoring can include video, audio, and other sensor modalities. In one embodiment, the system can include cameras, arena design, environmental sensors, and ultrasonic sensors. The system uniquely provides a continuous long-term monitoring system suitable for mouse behavioral study. Further provided is a neural network based tracker configured for use with video data acquired by the monitoring system. 3 different neural network architectures have been tested to determine their performance on genetically diverse mice under varying environmental conditions. It has been observed that that an encoder-decoder segmentation neural network achieves high accuracy and speed with minimal training data. This general purpose neural network tracker can be easily extended to other experimental paradigms and even to other animals through transfer learning, thus forming a robust, generalizable solution for bio-behavioral research.

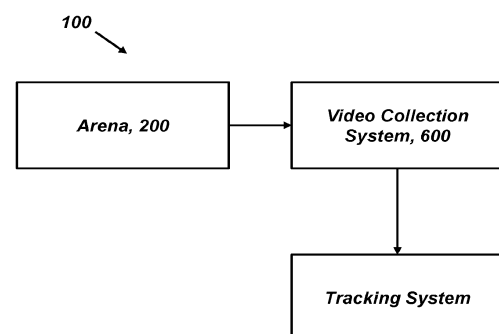


FIG. 1

(52) Cooperative Patent Classification (CPC): (Cont.)  
G06T 2207/20084; G06T 2207/30232



## EUROPEAN SEARCH REPORT

Application Number

EP 24 20 8296

## DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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			TECHNICAL FIELDS SEARCHED (IPC)
			G06T G06K
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
Munich		7 November 2024	Scholz, Volker
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			
T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document			

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ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.

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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
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07 - 11 - 2024

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